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Citrus Research Expansion Advanced

EXPERIMENT STATION DEVELOPS PLANS FOR ENLARGED
WORK AT LAKE ALFRED

BY JEFFERSON THOMAS

Initial plans for expansion of the Citrus Experiment Station at Lake Alfred were completed with the beginning of the new year, as forecasted in The Citrus Industry's December issue. Enlargement and broadening of the work were made feasible through the occurrences which the July, 1935, number of the magazine described in detail.

Factors of major importance that contributed to the program for citrus research in the state on a more comprehensive scale included appropriation increases authorized by the legislature at the last session and donations of land and money from the Florida Agricultural Research Institute.

Transfer to Lake Alfred from Gainesville of Dr. A. F. Camp, for eight years at the head of the horticulture department in the State Agricultural Experiment Station, who will be in charge of the developing activities, signified the interest therein felt by the College of Agriculture.

Institution under Doctor Camp's direction of nutrition and soils research, irrigation studies and by-products utilization work, additional to that already done or in process, indicates intention that the scope of the Citrus Experiment Station shall be materially widened without delay.

Investigations into citrus chemistry, cover crops, diseases, insects and propagation methods, initiated at intervals since the Lake Alfred branch station was established during 1920, are to be continued and in some cases placed on a considerably expanded basis.

Personnel of the Citrus Experiment Station in the recent past will be retained under the new arrangements. Included are John H. Jefferies, superintendent, Dr. B. R. Fudge, associate chemist, W. A. Kuntz, associate plant pathologist and W. L. Thompson, associate entomologist.

Staff members of the main station remaining at Gainesville will completely cover the entire field of agricultural experimentations.

Record of Doctor Camp

While he was born in California, Arthur Forest Camp during his youth corrected that error of nativity and his professional career has been entirely with Florida as the background. Graduating with honors from the University of California, where he majored in botany, at the age of 24, young Camp shortly thereafter entered the Washington University, which gave him a Ph. D. in plant pathology three years later.

Moving to Florida at that time, Doctor Camp became assistant patho-

logist for the State Plant Board, following two years' service in which capacity he associated himself with the Agricultural Experiment Station at Gainesville in 1925, taking up the duties of plant physiologist in cotton investigations. After two years he was made associate horticulturist and a year later placed in charge of the department.

Appointment as horticulturist of the Florida Experiment Stations came to Doctor Camp in 1928 and since 1929 he has also filled a similar position with the State Plant Board. Leave of absence from his major duties was granted him for several months during 1929 and 1930. That he might take charge of clean-up and spray work under the United States Department of Agriculture, in the Mediterranean fruit fly eradication campaign.

Refrigeration problems and the utilization of citrus juices have been outstanding among the studies directed by Doctor Camp in the past few years. Research in connection with the use of zinc sulphate as a soil amendment for groves also has received intensive and resultful attention under his supervision, and recently he conducted exhaustive investigations into freeze and frost condi-

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The County Agent . .

A Factor In The Progress Of Florida Agriculture

H. G. CLAYTON, DISTRICT AGENT AGRICULTURAL EXTENSION SERVICE

Regular County Agent work began 21 years ago with the passage of the Smith-Lever Act in 1914.

The early agents were selected from among the good farmers. Through boys' corn club and pig club work, farmers demonstrations in planting improved seed, proper fertilization, and improved methods of cultivation they were able to obtain results that were observed by farmers, business men and other citizens and thus was laid the foundation for the development and growth of the county agent work to its present status.

During the past 20 years much new information has been developed in the research program of the Experiment Stations. The county agents have carried this information to the farmers and through meetings, demonstrations and in other ways have been the most active agency in getting the results of the research work into actual use.

Much of the educational work and actual demonstrations in the control of hog cholera by the use of serum and virus was done by the county agents and for a number of years hog cholera control was a major project of the agents in the hog producing counties.

The preliminary work for tick eradication was largely done by county agents and this facilitated the actual regulatory work of eradication when this program got under way.

Following the tick eradication work, the improvement of pastures and introduction of improved breeding stock has been a part of the county agents' program of work. The results of these efforts are now evidenced by the increasing numbers of grade beef cattle and the increased acreage in improved pastures.

In the fruit and vegetable industry of our State, the control of insect pests and diseases together with increased use of cover crops, improved cultivation practices and fertilizer practices to take advantage of economic changes in the fertilizer industry have been sponsored and actively

engaged in by the county agents. The results obtained have enabled growers to withstand the effects of the low prices during the depression and the full value will be more readily seen as prices improve, as producers will retain and continue to operate on the lower production cost basis.

In the Agricultural Adjustment Program, the county agent has been the key man in the counties where programs for cotton, corn-hogs, tobacco and peanuts are in effect and in handling the syrup and potato programs now going into effect. The handling of the individual contracts, compliance papers and checks for the payments to farmers involving in round figures a million dollars a year for the past two years has been an outstanding piece of work by county agents.

In cases of emergencies to agriculture the job of handling such work as the emergency loans has been a part of the county agents' work and has been of untold benefit to the areas affected.

The county agent has been a factor in times of high prices for agricultural products as well as periods of low prices. Florida is constantly securing new farmers from other states. These men look to agents to assist them in getting started in a new location under conditions unfamiliar to the new citizen. In many cases such people are familiar with the service rendered by the county agent back where they came from. They know his interest is that of the farmer and that information secured from him is the best available.

The county agent is a joint representative of the County, State and Nation and is the representative of the Secretary of Agriculture; the facilities of the State Extension Service, Experiment Station, College of Agriculture and the National Extension Service and the U. S. Department of Agriculture are ready at all times to assist with problems which may be new or not well understood. The agent is a part of the county's agriculture, is in contact with and has

the confidence of the farmers and business men, is on the ground and knows the local conditions. Through this span of 20 years the experience gained from past work is projected into each new year's work. The present county agent force consists almost entirely of men trained in Colleges of Agriculture and with some years of experience in agricultural work.

Each county agent maintains an office and keeps a supply of bulletins available for distribution to farmers and others interested in agriculture.

The work with farm boys in 4-H clubs has yielded its proportionate share to the progress of Florida agriculture.

Some of the outstanding young men of our State today in agriculture secured part of their training and the incentive and opportunity to make their marks through their 4-H club work. This work reaches the boys back on the farm many of whom, without 4-H club work would be without the opportunity to make the most of their abilities.

The statements above give only a very brief outline of a few items, lack of time prohibits any detailed discussions of soil improvement work, co-operative marketing, dairying, poultry, fair work and other items of importance in which County Agents are actively at work.

In conclusion, the county agent is the only person in the county who as a paid employee devotes his whole time to the betterment and improvement of agriculture. The value and need of such service has been proven over a period of years. There is no legal requirement that a county have such an agent. The realization of the need and value of such service to the county and the willingness of the county to appropriate a part of the salary are the sole basis upon which agents are employed.

Each county agent operates on a definite program of work designed to meet conditions for the particular county. The average annual gross

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INSECT

Friends Of Man In Florida

BY E. W. BERGER

By "insect friends", we mean useful or beneficial insects, and do not imply any emotional or psychological attitude on the part of the insect towards Man.

Among the many kinds of insects, the useful or beneficial species belong mostly to the following seven groups, arranged consecutively in their order of importance:—

Hymenoptera (The Ants, Bees and Wasps);

Diptera (The Flies);

Coleoptera (The Beetles);

Hemiptera (Sucking insects, including Bugs, Lice, Scale-Insects, Aphids and others);

Odonata (The Dragonflies, or Mosquito Hawks);

Lepidoptera (The Moths and Butterflies);

Thysanoptera (The Physopoda, or Thrips)

Hymenoptera. — I presume that many of you, as you read the subject of this paper, at once visualized the honeybee flitting from flower to flower in search of nectar for making honey, that most desirable of sweets. Not so many of you also thought of the useful purpose served by bees (not alone the honeybee but bumble bee) in the cross-fertilization of many plants by carrying pollen from flower to flower.

But aside from the useful services rendered by bees, other members of this group, namely the wasps, large and small, serve a very useful purpose by destroying hosts of injurious insects, altho some useful kinds are also included. All of us are familiar with the mud-dauber wasps, of which some store large numbers of plant-eating caterpillars in their nests. But sad to state, others store large numbers of spiders, which latter are generally regarded as useful, altho taboo in the realm of the housewife, since they destroy large numbers of such insects as flies, mosquitoes, etc. Incidentally it may be mentioned that entomologists working in Louisiana have recently discovered that a blue mud-dauber wasp specializes on the Black Widow Spider, the poisonous effect of whose bite has recently been abundantly set forth in the press and magazines.

But among the most outstandingly useful insects belonging to the wasp tribe are numerous kinds of minute, wasp-like parasites that either deposit their eggs on the surface of other insects, or after puncturing the skin, deposit an egg on the inside. If on the outside, the little grub, after it hatches, penetrates the skin and feeds on the caterpillar's insides until mature, when it comes to the surface again. In the case of some caterpillars the parasites, after they emerge, spin small cocoons in which they transform into the mature insect. Sometimes dozens of such little cocoons may be seen attached to the outside of a caterpillar, which then soon dies.

Another species of these minute, wasp-like parasites complete development from egg to adult inside of aphids, cutting a round exit hole when mature. Colonies of aphids (plant lice) can frequently be found in which almost every aphid contains a parasite. Parasitized aphids gradually enlarge and assume a dull brassy or bronzy color, many showing the minute exit hole of the parasite. These minute wasp-like parasites at times become very effective as illustrated by the destruction of entire colonies of aphids. There are many species of these minute wasp-like parasites. Another common species, besides the one referred to on aphids generally effectively controls the Woolly White-fly.

Diptera.—It is a redeeming feature to be able to note that this group of insects, the flies, while possessing many disagreeable pests, such as the Housefly, Stablefly, Hornfly, Fruit flies, Screw-Worm Fly, which latter impresses one as about the most diabolical of insect creations, also possess members that are very beneficial. Outstanding among the beneficial species are the Tachina Flies, short, stout, bristly flies not unlike houseflies, hovering about flowers and rank vegetation. The maggots, however, are bred on various caterpillars. The immature young of flies are generally called maggots.) The adult fly deposits its eggs on some caterpillar and the young maggots, after hatching, bore their way inside and complete their development there. Many

an amateur entomologist has had the surprise of his lifetime when, instead of obtaining a beautiful moth or butterfly from some carefully cared-for caterpillar or pupa, he discovered only a brood of buzzing flies. Another species of Tachina Flies may deposit 12 to 20 eggs on the Southern Green Stink Bug so commonly present in Florida, with the same dire results to the bug.

Another very beneficial group of flies are the Syrphus Flies. The adults are rather odd-shaped insects, some species being long and slender, while others resemble bees. Some species deposit their eggs in colonies of aphids. The maggots hatching from these feed on the aphids and at times very effectively reduce their numbers.

Coleoptera.—There are many beneficial species among beetles, but in so far as the writer is aware, no internal parasites. The beneficial, or so-called friendly beetles are predators, i.e., they devour the whole or only parts of other insects upon which they feed. Lady-beetles are the outstanding beneficial group among the Coleoptera. Indeed, I need to name only the Vedalia, or Australian Lady-Beetle, as the great specific in the control of Cottony-Cushion Scale. Then we have the Mealybug Destroyer, and the several species that feed upon aphids, including the large Chinese Lady-Beetle introduced originally from China.

Other beetles, principally the Ground Beetles, prey upon many other insects, and have been observed to climb trees after caterpillars.

Hemiptera. — Beneficial insects among the Hemiptera occur principally among the so-called Assassin Bugs that impale caterpillars and other insects on their strong beaks and drain their victims of their body-fluids. Among these may be mentioned the Masked Bedbug Hunter, so-called because it feeds on bedbugs. This insect also feeds on flies and other insects. A closely allied species is the Big Bed-Bug that frequents trees and other plants for its prey, but may also insinuate itself into beds and suck human blood. This is probably the species that became

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Orchard Heaters

Grove Heaters - And Other Frost Protection Measures

BY E. F. DeBUSK

Citriculturist, Florida Agricultural
Experiment Station

The succession of low temperatures during December have stimulated considerable interest in grove heating. What I shall say at this time on the subject is intended for those who are practicing some type of grove heating and wish to make their equipment most efficient, also for those who do not have heating equipment and wish to know more about how much equipment is used.

As most of the grove heating in the state is in the form of open wood fires, what I shall say has direct reference to that type of heating. Of course certain fundamentals in grove heating apply in all cases regardless of the type of equipment used.

We might begin with the thermometers, since without adequate thermometers and the proper placing and use of same, the fuel consumed and labor applied may either be ineffective or a total waste.

In the first place, the minimum self-recording thermometers recommended by Mr. Ellison, in charge of the Frost Protection Service work, should be procured. A sufficient number of these thermometers should be obtained so as to have at least one to each 5 acres in the grove and one on the outside of the heated area. Or if one wishes to save a few dollars in the cost of equipment, he may replace a few of these minimum self-recording thermometers with accurate thermometers of a little lower price. In any event the thermometers should be tested before they are depended upon in grove heating work. By all means each thermometer should be placed under a shelter 4 1/2 feet above the ground. Such a shelter may be made by nailing two boards together, forming a right angle, and nailing to a post so that the thermometer may be placed on the back board forming the shelter. These boards should be 16 to 18 inches long and 8 to 10 inches wide.

The post should be securely placed in the ground so that it will not blow over. It should be painted white and placed out in the middles between the trees so that it can readily be

found at night. As a matter of safety, I think it is best to place the thermometer in the coldest parts of the grove. The one outside of the grove should be placed so as to represent the same temperature conditions as those in the grove. This one is used as a check against the readings in the grove where the firing is being done, in order to determine how much the temperature is being raised by the use of the fires.

In the case of open wood fires, or any other type of heating, the fuel should be in place before the cold night comes. Much labor is wasted and often failures result in waiting until night to distribute the fuel. If open wood fires are used, three or four sticks should be placed in position in each check with a sufficient amount of kindling to make possible quick lighting. I wish to stress here this matter of an adequate supply of kindling. I have seen a few failures in grove heating due to not having enough kindling to make possible, lighting the fires in a reasonable time. Under such conditions the results are, either only a part of the fires are lighted or the grower, realizing that he has not made proper preparation, will begin lighting his fires too early, allowing himself time to get over and relight a number of the fires. This results in a waste of fuel because some wood piles will burn readily and be completely consumed before the temperature reaches the critical point or the point where firing should begin. In some instances it has been noted that growers began early in the night when the temperature had scarcely reached the freezing point, in an effort to light wood piles where an adequate supply of kindling had been provided. After struggling all night at this effort in lighting, it was found that the temperature never did reach the critical point of 28 degrees. In these cases a good deal of fuel was wasted as well as labor, and a lot of anxiety on the part of the grower was needlessly experienced. After going to the expenses of providing thermometers and supplying

wood or other fuel, it is certainly poor economy to fail to supply adequate kindling for quick lighting. If this is provided one can wait right up to the critical point and then make a quick lighting. If this is practiced it will result in a saving of fuel and labor as it will often be found that the temperature will stop dropping just about the time it reaches the point where firing should begin.

It is a simple matter to prepare an adequate supply of kindling. Various kinds of kindling material are used but the most universal type is fat pine. A man with an axe going through the grove ahead of time can split fat sticks and lay the kindling in place, covering 10 acres of grove in a very short time. After the kindling has been properly provided, it is certainly very desirable to have a sufficient number of lighting torches to expedite the actual lighting of the fuel. With the approved lighting torches, employing the use of a combination of kerosene and gasoline, which are available at several points in the state, a good man can easily take care of the firing of three acres. With the use of certain types of oil heaters he can take care of many more fires. By all means, these torches should be operated according to instructions as they are dangerous when instructions are not followed.

In some groves where heating is done there is some danger of grove fires from grass and other vegetable matter lying around too close to the open fires or heaters. Protection against such fires can be strengthened by having a man go through the grove the day before the heating is to take place and with a rake clear the areas near the woodpile or heater. Of course a lookout for grove fires should be stressed all through the period in which heaters are going and especially along about daylight in the morning.

At least two cords of wood per acre should be provided for each night's heating. It is very desirable to have the wood all distributed through the grove, making it readily

available so that a man can go along and throw on an extra stick when it is needed. The same thing applies when the wood type heater is used. It is very unsatisfactory to try to distribute wood through the grove during the night when the heating is in operation, by either wagon or truck.

At the end of the heating season the wood may be piled under the trees if the grower so desires. This can be done without endangering the trees from termite infestation, provided the wood is not piled against the trunks of the trees. Of course wood may be better preserved by hauling it out and stacking it in racks, and especially by covering it with cheap roofing paper to protect it from the weather, but this is not considered economical where wood is available at a price of four or five dollars per cord. Fat pine wood would last about as long left in the grove under the trees.

For some very helpful specific instructions in grove heating, I would refer growers to a card prepared by Mr. Ellison of the Frost Protection Service at Lakeland, and printed and distributed by the Chilean Nitrate Educational Bureau of Orlando. One of these cards may be obtained from the office of your county agent, from

the different fertilizer companies and their representatives or from the office referred to in Orlando. Get a copy and read every word of it. It may save you money.

Just a few words in the way of caution in protecting your grove against low temperature. If you have failed to do the necessary oil spraying for scale and whitefly up to this time, do not spray until after the danger of cold has passed this winter. Every winter I notice somewhere in the state where growers have sprayed with oil right up into the winter. Where this is done and a cold spell follows, the danger of cold injury to the trees has been greatly increased. In fact, last winter attention was called to a number of groves where a part had been sprayed with oil just preceding a cold spell. Right up to the line, the cold injury on the sprayed part was much greater than that on the other part of the grove. Keep this in mind as it is not a very great inconvenience to postpone this spraying until a later date. It should be taken care of earlier in the fall in order to give the trees time to recover from the temperature shock of the oil application before the cold weather begins.

zones, it is through the medium of its scientific development that the capacity of yield, both in variety and quantity, may be sustained and increased. Experiment stations and other research organizations are now functioning, but an increasing demand for tropical products only emphasizes the expansion of research needs.

Both specific circumstances, as insect pests and diseases, and the general necessity and desirability of lowering production costs require extended research to attain the desired results. Again, the utility of many products and by-products can be determined and developed only by developed methods. Improvement of present varieties by scientific selection and breeding, so profitable in temperate regions but comparatively new in the tropics, that disease resistance, higher quality and greater yields may be secured, is opening a wide field. The introduction and adaptation of economic plants to a new environment is also offering great promise.

The first importations from the tropics necessarily consisted almost wholly of not easily perishable products, but later developments, based upon scientific investigations, have made possible the transportation of some perishables, as bananas and other fruits, to nearly all accessible parts of the temperate zones. Refrigeration research and the investigation of storage decays, both dealing with storage and transportation of perishable products, are of major importance that methods may be evolved for placing fruits and vegetables on distant and now unknown markets with a consequent increase in both production and consumption.

Because of its geographical location, Florida is in a peculiarly fortunate situation for the carrying of research with tropical and semi-tropical subjects. This situation permits of research within the state on such problems without the inconvenience and isolation so often encountered in tropical work. The southern part of Florida with its keys, is the only part of the continental United States that can be termed tropical; its climate being warm and humid and its plant life chiefly of the same composition or closely related to that of the West Indies. Many of the tropical fruits, from both the neo- and the paleotropics, are grown in greater or lesser quantity. Citrus fruits, most of them natives of tropical Asia and Malaya, comprise the major horticultural crop, with winter vegetables a close second.

Florida is cognizant of its potential

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Research With Tropical Crops

HAROLD MOWRY

RESEARCH, FLORIDA EXPERIMENT STATION

During recent years the attention and interest of everyone associated with agricultural progress have been attracted by the rapid development of tropical agriculture. Within the past few decades exports, both in amount and in kind, from the tropics have increased materially. Where only a comparatively short time ago those exports consisted mainly of such products as coffee and spices, they now include nearly the whole of the world's supply of cane sugar, copra, pineapples, bananas, palm oil, rubber and a large part of the rice and tea, as well as numerous other commodities in international trade. Values of exports for one year to the United States alone have been given as exceeding six hundred million dollars. Export figures, however, do not fully express the fundamental importance of the tropics since these areas are also a potential source of perhaps hundreds of products of which the commercial value is not yet known nor appreciated.

Many tropical products, for the most part little used or unknown until recently, are becoming economic necessities as are also many of those previously classed as luxuries, these including foods, materials used in textile manufacture, and many articles essential to the technical industries.

Vast areas of undeveloped lands exist in tropical countries, and this includes a part of Florida, that with energy, capital and research can be developed to bring more of the old and divers new commodities into world commerce. A conspicuous position in world economics has for some time been held by tropical areas; a status destined to rise much higher because of the variety, need and importance of the produce of these warmer regions.

Extended research in connection with agricultural problems of the tropics is now recognized as an economic requirement. In tropical agriculture, as with that of the temperate

The Citrus Industry

with which is merged The Citrus Leaf

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ALL IN THE SAME BOAT

Commenting favorably on an editorial appearing in the December issue of The Citrus Industry, the Mission, Texas, Times, published in the heart of the Texas grapefruit producing section and controlled by one of the leading citrus growers of that state, says that Texas growers also are guilty of shipping to market fruit which is unfit for human consumption. Endorsing our contention that none but fully ripened fruit of the highest quality should be shipped, the Times says:

"The Times, too, has repeatedly pointed out the folly of our growers and shippers moving inferior fruit to market and then expecting any returns from it or from first grade fruit which follows later and flounders on a market ruined by the dumping of the low grade fruit."

The California Citrograph, official spokesman for the California Fruit Growers Exchange, has frequently admonished California citrus growers in similar strain, all of which indicates that Florida citrus growers are not alone in this wholly unjustified practice of shipping unripe and unfit fruit to the markets.

As The Citrus Industry sees it, this problem of controlling the shipment of unfit fruit is not alone the problem of Florida or Texas or California, but of the three states combined. Federal standards have been established for the grading of citrus fruits. What we now need, in Florida, in Texas and in California, is the enforcement of such uniform standards by federal agencies. As states we have been unable to eradicate this evil practice. It is time that we called upon the federal government to do for us the thing which we have not been wise enough to do for ourselves.

WATCH YOUR EXPORT SHIPMENTS TOO

That export shipments of citrus fruits are subject to the same criticism as domestic shipments is shown by the following editorial appearing in the last issue of California Citrograph:

"Be careful to see that fruit you select for export markets is of a character to give

consumer satisfaction five weeks after you ship it," said L. D. Savage, Exchange special representative in London, in addressing a group of California citrus men on his return from his six months stay abroad. "You are not fooling anyone but yourself if you send inferior fruit."

Such advice would seem to be absolutely unnecessary but apparently it is not, for some lots of oranges and grapefruit and even lemons went from California to the European markets last season which were of a quality upon arrival, to bring nothing but discredit to our industry.

Shippers trying to develop foreign markets for American citrus fruits, which come in direct competition with the best fruits from other citrus producing sections should have the foresight to ship nothing but the highest quality fruit which will stand up under the trying conditions of ocean shipment and long rail transfers after arrival at foreign ports.

We wonder if any Florida shippers to foreign markets have been guilty of similar offence?

FLORIDA GROWERS MAKE USE OF PRODUCTION CREDIT ASSOCIATIONS

During the year 1935 Florida growers made loans amounting to \$1,723,308 from the ten production credit associations serving the state. A very material portion of these loans were made to growers of citrus fruits and were used largely in the payment of bills for fertilizers, insecticides, grove machinery and grove supplies. The sums thus provided were of vast benefit not only to the growers themselves but to the manufacturers and distributors of grove materials and supplies.

That the associations serving Florida growers were efficiently managed is shown by a recent report of the year's operations sent out by Harold C. Booker, information agent at Columbia, S. C. This report shows that the ten production credit associations serving Florida, after charging off all losses and making liberal provisions for any possible losses on last year's operations, had a net profit of \$12,149.48 for the year, according to figures released by Ernest Graham, president of the Production Credit Corporation of Columbia, which supervises the operations of the associations.

The Florida associations, Mr. Graham said, made loans last year to 2,000 growers for a total of \$1,723,308. These farmer-members paid only 5 per cent interest rate, Mr. Graham said, and only paid interest for the time they actually had use of the money.

"The fact that after two years' operations the capital stock of every association is unimpaired and the associations have begun building a surplus to take care of lean years speaks eloquently for the success of these farmer-owned, farmer-operated cooperative credit organizations," said Mr. Graham, "and best proof of the fact that the service which they are rendering is appreciated by the farmer is attested by the splendid growth in membership in 1935."

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- 5 Can be used with practically all other insecticides and fungicides excepting liquid lime sulphur solution. We recommend using with **CITRUS COPOSIL** either **ORTHO DRY SPREADER** (for disease control alone), or **VOLCK** (for disease and insect control), or **WHITE BAND** wettable sulphur (for disease and rust mite, only, control).



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IMPRESSIONS

.. By ..
Frank Kay Anderson

Of the plentiful press comments concerning our Ideal Mountain blurb in the November issue, we give the palm to Dick Hodgkin of Sanford, who writing from Washington to his Seminole County Sentinel called it an attempt to "make a mountain out of a dole hill."

Advent of a new "movie star" into the Joe Jinks comic strip in some metropolitan newspapers, by the name of "Pete Humus." Wonder if Bill Goding or his worthy boss Richard Whitney had anything to do with furnishing the inspiration for that?

Our personal reaction to a roomful of this "modernistic" furniture: We'd as soon bed down in a barber shop.

A meeting with N. C. (Dick) Ives, well known head of the Philadelphia fruit auction, who, by the way, happens also to be a Florida grove-owner. Some reminiscing, and fond recollections of the late Frank L. Skelley, who long numbered Dick Ives among his most cherished intimates.

Some citrus shippers we know are prone to claim that the New York market emphatically is NOT the real price - barometer of the business. Yet both Dick Ives and Don Cancelmo, despite their loyalty to Philadelphia, restless and anxious until they had received full reports of the New York citrus sales of the day.

Interesting that, right upon the eve of the Supreme Court's decision adverse to the AAA, Dick Ives strongly favoring control of Florida citrus shipments, and decidedly of the opinion of the advantage of pro-rated shipments, and consequent better price levels, in his own auction.

Prof. E. L. Lord and this writer tied up for a couple of hours in one of those customary, and footless, arguments concerning methods of fertilization — which spontaneously start nowhere and wind up about in the same place. Dick Ives claiming every word of it over his head, but never the less missing nothing.

Think we did score on Prof. Lord

this time when we used the word "copesetic" without incurring a comeback. "Copesetic" is the invention of that nimble-footed Bill Robinson of the stage, and means "O. K." By the way it is going into the new dictionaries.

We've got another nice word for the next session with Prof. Lord. It is "phoitebinder," the invention of John Jr., son of Bishop Wing of Winter Park. It's meaning, as we gather it, is much the same as "Selah."

We have to keep alert to obtain ammunition to offset the bombardment of technical words and phrases which the Lord person customarily hurls at us.

Sol Wittenstein, the well known Orange county grower, pondering over a plan for a central office to list and sell crops on the trees for cash. Not such a bad idea, and someone like Sol, with his unusual reputation for being exceedingly smart and at the same time a real square-shooter, might do something worth while with it.

Well, here's a bid from Walter Dunn at Mount Plymouth for the fourth annual citrus golf tournament. Mighty nice, and all that; but we refuse to fall for it. We have been playing golf now for just about 35 years, and for the past thirty years we have grown progressively worse; and the trouble with these tournaments, like some fishing trips, is that certain number who insist upon playing golf.

A lot of good, and some very excellent, golfers among the citrus crowd, but our personal nomination for the most deceptive is Joshua C. Chase. Not long ago we followed around a foursome of oldsters in which he was playing, and we consider him a slicker. Gives the impression he expects to have a lot of trouble on each hole, and then just punches the ball along with what look to be easy pokes; but there's considerable distance at that, and always the ball stops almost squarely in the center of the fair-

way, and well away from traps.

A meeting with W. W. (Pete) Yothers in Orlando, and following his retirement from USDA he's getting along mighty nicely, thank you, with his grove service. In fact, if it were not for his grove, he'd be sitting on top of the world. The explanation for that statement lies in the fact that his grove was hit mighty hard by last winter's cold and needs considerable rehabilitating. That was pretty tough, for we were in the grove just about two months before the cold hit, and never did we see a citrus property in finer condition, nor with a heavier or more beautiful crop of fruit.

By the way, if you go in for that Mount Plymouth golf tourney, ask Walter Dunn to direct you to the Yother's grove. It is fairly close by.

The annual meeting and dinner celebrating the twelfth birthday of the Growers and Shippers League of Florida, in Orlando January 8, was more than a success. As might have been expected, a tendency to reelect everybody from President Woolfolk down through the list, and generally succeeding through the satisfactory nature of the administration.

Very stiff opposition, however, to reelection of A. D. Keene of Eustis and Winter Garden to chairmanship of the membership committee, but the movement finally carried over the opposition. One of the stiffest and most determined fights of the season in citrus circles. The opposition, led, floor-managed and solely composed of A. D. (Dolphus) Keene in person did put up a fight worthy of Huey Long's best efforts; but was alternately bullied and cajoled into line. Of course, he was right, technically right, such an organization should pass such jobs around; but he had made a most unusual success of it during the past year and his reelection wasn't just a matter of laying the buck again in his lap, but really for the good of the order, and the welfare of the League.

J. W. Sample, who has done much

to put the city into Haines City, out for the occasion. Doesn't get about as much as he used to do, but apparently thinks enough of the League to make the effort in its behalf. Time once was when they didn't even bother to send an invitation to him for any citrus gathering of importance. Just used to check in his acceptance and reserve him a place automatically.

Jim Morton of Auburndale, living up to his resolution not to miss a free meal, was on hand well ahead of time. No, it wasn't a New Year's resolution, just the same old resolution he early acquired in Scotland as a small child.

Louis A. Hakes of Orlando, once widely famed as the inventor of the Temple Orange, but now even more widely known as the Guy With The Beautiful Hair, doing a pretty good job of eating fried chicken. From the looks of things few suspected how he missed his customary evening's codfish cakes.

Howard C. Babcock of Orlando, holder of the copyright upon being a simon-pure grower, grew confused when called upon to say something, and admitted he was a Republican. And we'd always thought he was a Presbyterian.

The Sanford vegetable crowd turning out strongly for the meeting. If other vegetable sections took comparable interest in the affairs of the League over a period of years, it would be beneficial to the vegetable interests of the state, and helpful to the League.

However, Leesburg was there in force, represented by Capt. F. C. W. Kramer, who rates in both citrus and vegetables in Lake County. Capt. Kramer's son was along, and taking a keen interest in the proceedings.

W. H. (Bill) Mouser of Orlando functioned in his normal capacity of oil-pourer. Just when it looked as if Dolph Keene was going to get away with his opposition to his own reelection, Bill arose and in his well known manner spread the oil liberally and with great beneficence, and the storm subsided.

A fitting tribute to League members to the former long active, and now honorary president, L. B. Skinner of Dunedin, in the form of telegraphed greetings and solicitous hopes for his better health. Joshua C. Chase

said several mouthfuls when he paid tribute to Mr. Skinner's long untiring and unselfish services to the organization, and to the impartiality of his administration which did so much to draw together and reconcile various warring citrus factions to the end that all might do their part in support of the organization for the common good.

A really fine showing for the League for the past year, notwithstanding decreased revenues due to the freeze; and very sincere congratulations from all to J. Curtis Robinson upon the completion of his twelfth year of service to the traffic interests of the Florida fruit and vegetable industry. In a dozen years here the executive vice-president of the League certainly has made a warm place for himself in the regard of all Floridians.

Joshua C. Chase's reminiscences of some of the traffic troubles away back yonder in the long ago of the citrus industry, and of the first big Florida citrus rate case before the Interstate Commerce Commission were most interesting when given at the dinner, particularly the high light of the star witness who went out to see Washington the night before the hearing and consequently failed to function in the expected manner when the great day arrived.

Bill Sharkey, in whose restaurant the dinner was held, did himself proud with a couple of immense birthday cakes for the League. Strangely these were not only good to look upon but splendid to eat. President Woolfolk was so moved to enthuse that he went into the routine of that old, He's All Right, Who's All Right stuff, honoring the Sharkey person. It was a fine bit of organized enthusiasm. At the end Bill Sharkey all red, and pleased, and a momentary dead silence, when softly there drifted upon the air the sound of a hushed but unmistakable Bronx Cheer that almost broke up the party. It was a dastardly thing for one of the guests to do; and certainly not in tune with the spirit of the occasion. We hereby promise Bill Sharkey we shall do our best to ferret out the offender. It might have been John Meisch of Sanford, who sat upon our right, or, again, it might have been Perry Whitehurst of Sanford, who sat upon our left; but we shouldn't like to fasten it upon either of them.

Fine news, the appointment of General A. H. Blanding of Bartow

to be chief of the bureau of the National Guard in the War Department, at Washington, with the rank of Major-General. It will find hearty approval in Florida, particularly in citrus circles where he is well known and highly esteemed. A particularly fitting appointment, we take it, when it is recalled that General Blanding has been keenly interested in the National Guard in one capacity or another since the days of his graduation from the old Florida Military Academy; and during the World War achieved the distinction of being the one and solitary National Guard brigadier general to make good in a big way.

And Jefferson Thomas back again as news commentator during the Farm Hour at noon from WRUF at Gainesville, to the very considerable delight of hearers all over the state. The best such job, many opine, that is being done anywhere, not to disparage the work of Lowell Thomas, Bo Carter or Kaltenborn.

Sure sign of the season: John F. May and Jack Guthrie to be encountered zipping by over the roads here and there over the peninsula. The usual business of preparing for the an-

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Serving some of the South's foremost businesses.

nual Orange Festival at Winter Haven, to which they devote themselves so heartily. Let's see— the Orange Festival dates this year are January 27 to February 1 inclusive.

And Cocoa isn't forgetting its own Indian River Orange Jubilee, to be staged February 5-6-7, with Harry Greer, Marston Miller et al busy with preparations and plans.

Contrary to widespread popular belief, the recent Supreme Court de-

cision concerning the AAA did not put an end to marketing agreements. The California citrus agreement for this season has recently been promulgated and put into effect. The Florida celery sign-up is proceeding as these lines are written.

Texas, for the reason of a short crop and other reasons of its own, decided to get along without a citrus control this season, and no effort was made there to obtain an agreement.

By the way, Ed Markel, formerly of Sanford, continues as the AAA man in the field in California, and his work during the previous two seasons is said to be most highly regarded.

The recent Supreme Court decision which came in for such large publicity knocked out the AAA's right to levy processing taxes, and to endeavor to exercise production control, through limitation of acreage or otherwise, but it did not directly affect

(Continued on page 22)

BROGDEX

The Mark of a Good Product

It has been more than a decade since Brogdex was first introduced in Florida. Now after all these years our most loyal customers are those who started with us at the very beginning.

From scratch ten years ago to more than four and a half million boxes last season shows the steady and substantial growth of Brogdex. Without real merit and without value received such a volume could not have been built up.

And because of the prestige and reputation thus established there have appeared from time to time various substitutes and imitations of Brogdex, frequently claimed to be "just as good," but in commercial use the best of them never approached the high standard of finish, appearance and keeping qualities characteristic of Brogdex treated fruit.

Fruit is one thing that is bought by the eye and appearances count most. Invest a few cents a box for Brogdex — it will doll up your fruit with a highly polished finish and give it that fresh, appetizing appeal that means so much in the sale price.

If you are planning to use the new Color Added process — which we will be glad to furnish — Color and Brogdex make an ideal combination. Color improves the appearance while Brogdex provides the finish and keeping qualities.

If you are not already a Brogdex-Color Added house, may we submit a proposal for both — on a basis involving very little capital investment, the balance being paid on the per box plan as you go?

Florida Brogdex Distributors, Inc.

B. C. Skinner, Manager

DUNEDIN, FLORIDA

January, 1936

INSECT FRIENDS OF MAN IN FLORIDA

(Continued from page 7)

known as the Kissing-Bug some years ago in some of the inland states.

The Wheel-Bug is another related species frequently observed on citrus trees where it feeds on caterpillars and other insects. It is so-called from the presence of a spiny segment of a wheel on its back. If carelessly handled, it may also puncture the human skin.

Odonata.—Dragonflies or Mosquito Hawks are all predaceous and destroy

THE CITRUS INDUSTRY

many flying insects.

Lepidoptera. — In this group we have only a few species, in so far as I am aware, whose caterpillars feed on other insects, namely, scale-insects, and we frequently find one or two species in colonies of Cottony-Cushion Scale.

Thrips.—In the numerous thrips family we know of only a single species that is predaceous and feeds on the crawlers of scale-insects and presumably the minute young of others. It is occasionally collected on citrus. Several other species are suspected of being predaceous.

Fifteen

It is, of course, impossible to more than barely skim this subject of Insect Friends in a paper of this length, and I may, furthermore, have omitted species that should have been included. Those specially interested will find additional information in Extension Bulletin No. 67, and Experiment Station Bulletin No. 232, both obtainable from the Florida Experiment Station at Gainesville.

Four-H clubs for girls were organized recently at Lake Wales and Babson Park, according to Miss Lois Godbey, home demonstration agent.



Calcium Nitrate

Not only makes healthy and vigorous roots but when applied to citrus trees at this season helps develop a heavy bloom and a fine crop of fruit.

with water-soluble calcium



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Calcium Nitrate

is nitrate nitrogen and water-soluble lime—two plant-foods for the price of one.

Write for booklet

JACKSON GRAIN CO.

TAMPA, FLA.

Nitrophoska — Calcium Nitrate

Photos Courtesy New Jersey Agricultural
Experiment Station

CITRUS RESEARCH EXPANSION ADVANCED

(Continued from page 5)
tions.

Meaning of the Expansion

With the development of the Citrus Experiment Station at Lake Alfred as now contemplated, Florida will for the first time maintain research respecting her largest agricultural industry in a manner comparable with the methods employed by competitive producing areas.

Contentions that the revenue earning capacity of the grapefruit, orange and tangerine groves of the state merited provisions for protective measures in a much larger degree than hertofore have been available were successfully presented to the 1935 legislature.

Leadership in the campaign to this end was taken by the citrus committee which the Winter Haven Chamber of Commerce maintains on a permanent basis. Organizations of growers and marketing agencies joined wholeheartedly in the undertaking.

Associated Growers and Shippers, the Florida Citrus Exchange and the State Horticultural Society officers and members were particularly active in the effort with senators and representatives.

Fertilizer manufacturers composing the Florida Agricultural Research Institute assisted in the endeavor centered at Tallahassee and later supplemented the state funds secured there.

Forty of the fifty acres of land that will be developed at Lake Alfred, additional to the eighty already in cultivation, were contributed by this group.

Cash in the sum of \$650 also was conveyed to the Citrus Experiment Station resources from the treasury of the Agricultural Research Insti-

THE CITRUS INDUSTRY

tute.

Contributions were accepted by that agency from a few sources outside of its own membership.

Looking to the Future

Flexibility in plans of work has been a distinguishing feature of the State Agricultural Experiment Station under the administration of Dr. Wilmon Newell as director. Capacity for quickly dealing with new problems when they arise thus has been assured.

Dean also for the College of Agriculture in the University of Florida, Doctor Newell likewise directs the farm demonstration activities to which the State Agricultural Extension Service is devoted. Affiliation of the several agencies gives close cooperation.

In announcing the plans for expansion in the operations of the Citrus Experiment Station, Director Newell stressed the fact that it is the intention to modify and enlarge them as circumstances may warrant and conditions demand.

Discoveries that may be made are to be promptly disseminated among growers, Doctor Newell further stated, through the Agricultural Extension Service organization and otherwise.

Information service for the press, conducted jointly by the state farm agencies at Gainesville, is to be extensively utilized for the same purpose, as will radio broadcasts.

Inquiry into the research systems of citrus fruit-raising areas other than Florida already has been started, with H. Harold Hume, assistant director, in charge.

Procedure current with experiment stations elsewhere in the citrus belt may be found helpful and suggestive, it is believed.

If soil is too acid for crop growth, excess acidity can be overcome by the use of some liming material, most common of which are ground limestone, hardwood ashes and hydrated lime. Ground limestone is cheapest and is quite effective. Amount to add will be determined by the degree of acidity of the soil and the reaction desired.

Finely ground waste tobacco which will pass through a 200 or 300 mesh screen, particularly if mixed with sulfur, will give fair control of more delicate insects such as aphids and thrips. It is more effective on plants like strawberries, which lie close to the ground.

Florida Orange Festival

January, 1936

ORANGE FESTIVAL WILL EXHIBIT STATE-FEDERAL CITRUS WORK FEATURES

Florida citrus growers will have an opportunity to acquaint themselves with citrus work being done by state and federal agencies in Florida by visiting the Florida Orange Festival at Winter Haven January 27 to February 1. A comprehensive display is being prepared by workers at the Citrus Experiment Station here, with the cooperation of Dr. E. S. Ellison of the Federal-State Horticultural Protective Service at Lakeland.

The exhibit will feature frost control, varieties, rootstocks, disease and insect control, and other interesting points about citrus production.

In conjunction with it will be a display of home canned and preserved citrus products put up by home demonstration women in a number of citrus counties.

Spuds Johnson says the wise man never burns a bridge that carries him over a river he must cross constantly.

PATENTS

Send me sketch, picture, or model of your new invention. I will give you prompt report on its probable patentability based on a search of the patent records for a small charge.

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VINES, ETC.**

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ASTHMA and SUMMER COLDS are unnecessary. Complete relief only \$1 Postpaid. Nothing else to buy. Over 40,000 HOLFORD'S WONDER INHALER sold last year alone. Mail \$1 today for full season's relief to THE DANDEE CO., 252 Hennepin Ave., MINNEAPOLIS, MINN., or write for Free Booklet.

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Jacksonville, Florida

RESEARCH WITH TROPICAL CROPS

(Continued from page 9)

tropical resources. As one means of fostering their development, the University, through its College of Agriculture, is offering courses in tropical and subtropical horticulture and has made available facilities for graduate work in those and related subjects and is carrying on numerous research projects at the agricultural experiment stations.

Due to a diversity of soils, crops, and climate the University maintains four branch experiment stations and seven field laboratories in addition to the Main Experiment Station at Gainesville. The substations and field laboratories are, for the most part, widely separated, being strategically located at those points where the work involved can be carried forward to best advantage. At Lake Alfred, in the citrus belt, the work is confined to problems affecting the citrus industry; at Belle Glade, in the Everglades, to the numerous difficulties incident to the introduction and production of crops and livestock on the muck soils of that area; at Quincy, in the tobacco section, to tobacco and general crop and livestock production; and at Homestead, in the southernmost part of the peninsula, the investigations are limited to tropical vegetable production. At the field laboratories investigations are confined mainly to insect and disease problems.

Research, as a whole, at the several stations and laboratories covers an extremely wide range of agricultural activity, the numerous projects embracing plant pathology, entomology, soils and agricultural chemistry, home economics, agronomy, horticulture including refrigeration and fumigation investigations, animal husbandry, veterinary science, plant physiology, and agricultural economics. A considerable part of the findings from these various activities is directly or indirectly applicable to tropical conditions, and it is upon these and like investigations that we must depend for a greater development of Florida's tropical agriculture resources.

Twelve thousand miles of roads and trails were built in the National Forests during 1935, according to the Forest Service. Maintenance work on 184,000 miles of roads and trails was done in 1935, also. The CCC did much of this work, the Service reports.

CROP success depends on feeding soils the right amounts of the right plant foods at the right time. ★ Gulf Friendly Fertilizers combine the requirements of specific Florida soils and crops. ★ Growers who use them have the advantage of dependable all-year Gulf Field Service. ★ Successful growers everywhere say the Gulf program is a money-saver year in and year out.

GULF *Brands of*
FERTILIZER



THE GULF FERTILIZER COMPANY

36th Street, South of East Broadway, Tampa, Florida

New Fertilizer Concern Organized

Announcement is made of the organization of the Rex Fertilizer Co. of Jacksonville, Fla. The new company will shortly begin the manufacture of fertilizer at a plant located on the Viaduct at Jacksonville. The officers are Ray King of Valdosta, Ga., president; J. J. Kerns of Jacksonville, Fla., vice-president and manager of the Florida branch; Herbert Lyman, Orlando, sales manager, with headquarters in Orlando.

Mr. King has long been connected

with the fertilizer industry, having plants at Valdosta and Douglas, Ga. Mr. Kerns at one time was connected with the Armour Fertilizer Works at Jacksonville, and Mr. Lyman has had long experience as a salesman for fertilizer concerns dealing with the Florida territory.

Announcement of the organization was made at a recent "breakfast" sponsored by Mr. Frank Kay Anderson at Sharkey's restaurant in Orlando.

Careful Grading And Packing Is An Asset To The Grower

BY V. F. NETTLES

Many Florida growers are interested primarily in the details of production. Too few realize that the horticultural industry of Florida is suffering an economic loss of millions of dollars annually due to poorly graded produce and produce that is carelessly packed in cars for shipment. Fertilization and grove culture are truly vital factors in the growing of fruit, but if this same fruit reaches the market in poor and damaged condition it has lost its original value.

From the grove to the market the fruit is at all times liable to injury. To begin with, in picking, the fruit should be cut with clippers, leaving a short stem as a long stem is a great source of damage. Great care must be taken, also, in avoiding undue roughage in the hauling and unloading of fruit. The fruit should not be jolted or dropped unduly. Greater care must be taken during damp weather as the rind is more easily injured. Once the rind is injured, it opens the road for rapid decay.

A packing house that is kept clean, neat, and free from decaying fruit is both an asset to the packer and the grower.

When the fruit is received from the grove it undergoes a coloring process. Fruit, to be colored well, should have reached a certain degree of maturity. Color adds nothing to the fruit except color. Green fruit, therefore, can in no way be aided by this process.

The question of shipping green fruit is a problem of field grading. The problem of restricting the handling of green and immature fruit has been before the growers, shippers, and consumers for years. There is always a strong temptation to take ad-

vantage of the higher prices offered during the months of September, October and November when the fruit is scarce. Much fruit, unfit for consumption, has gone into the markets early in the season. As a result, a demoralized condition of the citrus market occurs each year.

The fruit after being through the coloring process is washed where care must be taken not to injure it. It is then dried by air and carried by belts to the graders.

The graders make the reputation of the citrus district. A grader should look at each fruit that passes and all inferior fruit should be picked out and discarded as culls. Every grower or packer should be desirous of being recognized by the consumer as one who places fruit that is first-class upon the market. The grader who is careless and lets fruit by that should be placed in the cull bins is not helping the packer but, on the contrary, is actually cheating him.

Many packers have accepted the United States Department of Agriculture Standards for grades of citrus fruits. By use of these standard grades, uniformity of product will result in the building of confidence on the market.

After the fruit is graded, it is sized according to diameter by machine. Fruit is packed in boxes according to size, one size to a box. Oranges may be packed from 96 to 252 per box; grapefruit from 28 to 96 per box. Each fruit is placed in the box according to a definite arrangement, making the contents solidly packed and yet retaining a certain amount of elasticity.

When the fruit is finally packed, the box is practically level at the

ends, but, at the center, it sometimes rises up on to one and a half inches above the sides of the boxes. This is done by placing the large fruit in the center which results in what is called the "bulge" pack. This will allow for a certain shrinkage of the fruit and keeps them packed firmly.

In packing the car, the boxes are placed on end, six boxes crosswise of the car, and two tiers deep. A forty-foot car will hold 384 boxes; in a car thirty-three feet long, 360 boxes are packed. Heavier loading has been attempted at times by placing a third row of boxes flatwise on top, but the results have been entirely unsatisfactory.

Each tier of boxes is fastened in place with thin strips of wood, known as car strips, extending across the car and are nailed to the ends of the boxes.

If the car is improperly packed, it causes breakage which results in creating a bad psychological effect upon all who handle or see the produce, causing a mixing of grades, causing direct damage to the fruit, causing payments of re-cooperation charges, and provides the basis for the filing and payment of most of the damage claims.

If the packed citrus be properly loaded and packed, the car should arrive in market in good condition and if the fruit has been properly sized and carefully graded the packer and grower will stand a much better chance to see a profit on the transaction and to gain a reputation that will aid him in future seasons.

Nearly 100 million tons of phosphate rock have been mined in Florida since 1888.

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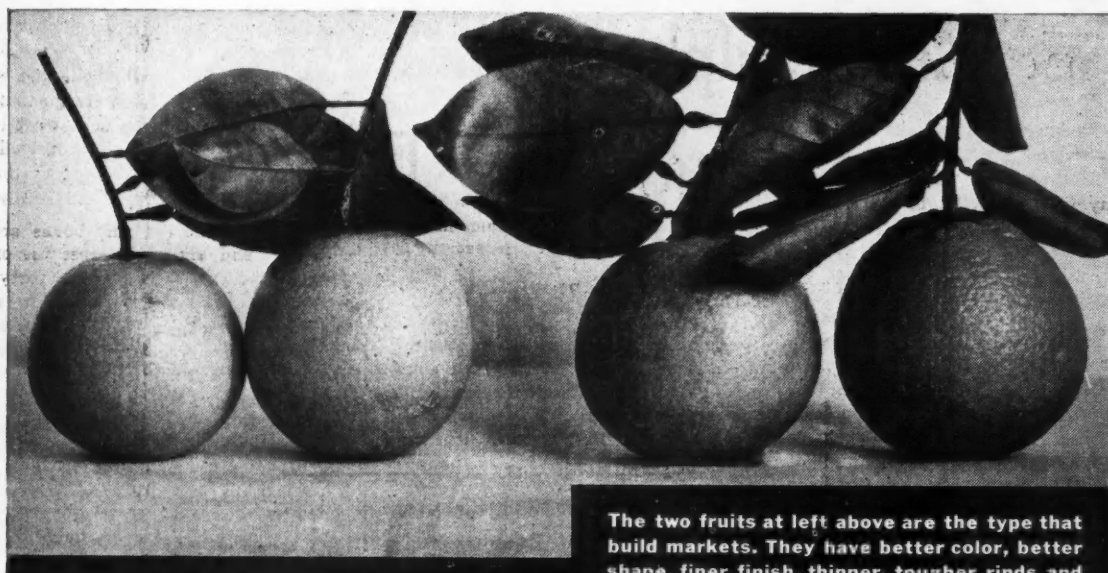
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Pumps Engineering
Machinery Layouts

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The two fruits at left above are the type that build markets. They have better color, better shape, finer finish, thinner, tougher rinds and more juice of finer flavor. Compare these with the fruits at right which were poorly grown, poorly fertilized, are rough and coarse, and contain less juice of a poorer quality. Note the differences in the wood and leaves.

QUALITY

... builds markets

Growers who consistently top the market with their fruit not only make the best profits but also help to stimulate the general demand for Florida produce. Consumers are careful shoppers. They are quick to recognize quality and will pay a premium for it. The best way to build the market for Florida fruit is to put your own crop in the top grade.

The fruit reflects the fertilizer! Smooth, well-shaped fruit with fine finish, high color, excellent texture and a large volume of juice with the proper content of solids—this is usually a sure indication of a well-cared-for, well-fertilized grove. **NV Sulphate of Potash** is the quality builder in fertilizer. Every time you feed your trees feed them fertilizer well-balanced

with 10% potash, derived from **NV Sulphate of Potash**. It takes quality fertilizer to produce quality fruit.

It does not always pay to select fertilizer on brand name alone. Look at the analysis tag. Ask for and get fertilizer containing plenty of potash, derived from **NV Sulphate of Potash**. Remember, Quality Always Pays!

FEED YOUR TREES EARLY

Your citrus trees need **NV Sulphate of Potash** early when the feeder roots are most active and can absorb it to manufacture sugars and starches to feed young fruits. Potash applied early increases the density of the foliage for this manufacturing process. The fruiting tendency is increased

through fruit bud differentiation. More bloom sticks on the tree. This means bigger yields of heavy, smooth, juice-laden fruit. Plan now to give your trees an early application of fertilizer containing 10% potash, derived from **NV Sulphate of Potash**.



SULPHATE OF POTASH

is the Quality Builder in Fertilizer

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J. L. Baskin, Representative, Box 1051, Orlando

Zinc Sulphate

Studies In The Soil

OWEN E. GALL

ASST. CHEMIST, FLORIDA AGRICULTURAL EXPERIMENT STATION

Since the finding by Harold Mowry of this Station that zinc sulphate could be used as a corrective for bronzing of the tung oil tree, several other plant ailments such as frenching of citrus, white bud of corn, and pecan rosette, have been remedied by applications of zinc sulphate.

In the last two years many field trials on different crops using zinc sulphate have been undertaken. From results obtained it was evident that further knowledge of what became of the zinc after it was added to the soil and how much zinc could be added before toxic limits were reached would be necessary. A series of greenhouse and laboratory tests were then started in order to study these factors.

The first study undertaken was determining the absorption capacity for zinc of various important soil types found in the State. Norfolk fine sand, marl, sawgrass peat, Orangeburg fine sandy loam and Greenville clay loam were chosen. It was found that the amount of zinc ions absorbed was highest in soils of a high colloidal content, high calcium content or soils containing large amounts of organic matter.

These tests were necessary to give us an idea of the amounts of zinc safe to apply in the test plots. They showed that much more zinc would be required to make a heavy soil toxic than the amount necessary to produce toxicity on a light sandy soil.

Norfolk fine sand, a representative soil of the general farming area of this State, was chosen for the first pot tests. A series of pots was estab-

lished and divided into seven groups. Each group of pots was treated alike with respect to zinc but received different fertilizer applications. Zinc was applied in each group at rates ranging from none to 900 pounds per acre. This maximum amount was equivalent to 3960 pounds of 56% zinc sulphate.

All groups received ammonium nitrate as a source of nitrogen at a rate of 100 pounds per acre. Group I was used as a check and only received the nitrogen. Group II, in addition to the nitrogen, was treated with mono calcium phosphate equivalent to 600 pounds of superphosphate per acre. Group III received the nitrogen as above plus potassium sulphate at a rate of 100 pounds per acre, and Group IV received the nitrogen and both the phosphate as in Group II and the potassium sulphate as in Group III. Group V, in addition to the nitrogen, was treated with calcium carbonate at a rate of 1000 pounds per acre; Group IV received 500 pounds per acre of calcium sulphate and the nitrogen, and Group VII was treated with both the calcium sulphate and the phosphate with the nitrogen.

Two groups of corn and cowpeas were grown in rotation in these pots. The top growth was harvested, dried and weighed.

A marked lessening of toxicity due to zinc was shown in the pots containing calcium carbonate. This was probably due to the formation of insoluble zinc carbonate after replacement of the calcium. The group containing the phosphate also had this same tendency. There was no marked difference in the other groups except for an increase in growth over the check pots. There was a marked toxic effect shown by the cowpeas at zinc concentration of about 500 pounds per acre. Corn was not affected until the concentration reached about seven hundred pounds per acre. Transferring these zinc quantities to 56% commercial zinc sulphate, it is shown that 2000 pounds of zinc sul-

phate would have to be broadcast per acre to be toxic to cowpeas, and 3000 pounds per acre are necessary to be toxic for corn. Expressed differently, it would be necessary to add zinc sulphate seventy five to one hundred years at the present recommended rates before toxic quantity would be present. This is assuming that no zinc is washed out by rainfall.

A similar series of pots is now being established using Orangeburg fine sandy loam and Greenville clay loam.

Large numbers of soil samples were taken and tested for water-soluble and replaceable zinc content from citrus and tung oil groves where zinc sulphate applications had been made. These tests were to determine the mobility and final form of zinc in the soil. Results from a Satsuma grove soil here in Gainesville will be discussed as an example.

Samples of soil were taken at periods of one week, eleven weeks and seven months after applications of zinc sulphate. The samples were taken at depths of 0 in. - 3 in. and 3 in. 6 in. No rain had fallen between the

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Lists of Florida Citrus Growers compiled from recent survey of groves, arranged by counties. Names, address, acreage and legal description.

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Why not give your grove a break?

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time of application and date of the first sampling. The zinc was found to be still mostly in the water soluble form. Fourteen inches of rain fell before the next sampling. As a result very little water soluble zinc was found in either the 0 in. - 3 in. or 3 in. - 6 in. depths. The rain had carried the zinc sulphate into solution. Part of this solution of zinc had reacted with lime and other compounds in the soil and the zinc was changed from the water soluble form to what is known as a replaceable form. The rest was washed on out of the soil. Zinc in the replaceable form, even though not water soluble, is considered as available to plants. Seven months after application of the zinc sulphate very little of the zinc could be found in either the 0 - 3 in. or 3 in. - 6 in. depths. But results showed that the lower depth had increased steadily in replaceable zinc content even though the total amount was very small. Through some complex action the soil is apparently able to change the replaceable zinc into water soluble form thus allowing it to be leached to lower depths of soil where it is again changed into the replaceable form.

If these results are correct it seems that there is little danger of zinc toxicity developing in our soils from the present recommended soil applications of zinc sulphate.

ORANGE WASHINGTON PIE

Orange Filling: Use 1 tablespoon cornstarch, 2-3 cup sugar, 1 cup milk, 2 egg yolks, 1 tablespoon gelatine, $\frac{1}{4}$ cup cold water, $\frac{1}{2}$ cup orange juice, rind of one orange, 2 egg whites, and 1 teaspoon lemon juice.

Mix the cornstarch and sugar together. Add the milk gradually and cook in top of double boiler 10 minutes. Add the slightly beaten egg yolks slowly and cook over hot water until thick. Dissolve the gelatine in the cold water and add to the cornstarch mixture. Add the orange juice, rind and lemon juice. While still warm, fold in the stiffly beaten egg whites and chill.

When filling is well chilled and has begun to stiffen, about 2 hours, pile it on one layer of cake and place the other layer on top. Leave in a cold place until time to serve.

Note: This filling is very good served as a separate dessert. Chill and pile in sherbet cups. Will serve about 8.

Spuds Johnson says a person has reached middle age when he stops growing everywhere except in the middle.

THE MIRACLE OF MAN O' WAR



AMONG ALL THE HORSES that have thrilled sport-loving America, Man O' War holds first place. Nature favored him as she did no other. To him she gave her greatest gift—perfect natural balance of all the elements that go to make a champion.

Back through the ages, Nature began the miracle of Man O' War. Speed from one strain, courage from another, endurance from still another—blended at last into perfect balance in this horse with the natural ability to prove his superior qualities every time he ran. A champion in every respect.

And here's another champion—another of Nature's miracles—Natural Chilean Nitrate. With its natural balance of vital impurities over and above its nitrogen, this natural fertilizer stands out as a champion should, by its everlasting ability to produce. Nature herself blended the vital spark into Natural Chilean. It's there—the natural blend and balance of many elements—the vital impurities. That's why Natural Chilean is the logical nitrogen for your crops.

Natural CHILEAN NITRATE



The Vital Impurities In Nature's Own Balance and Blend

IMPRESSIONS

(Continued from page 14)

numerous of other AAA functions.

A more basic, and fundamental, attack upon the AAA, as it has operated in Florida, lies in Chase & Co.'s refusal to pay the tax laid upon Florida celery to defray the costs of the celery control. It is anticipated that this will force the AAA to take the matter into the courts, in which event the final decision must either make or break the AAA, for without the ability to levy upon each particular industry the cost of its control operations the AAA hardly can expect to exist.

"Quality Now Controlled By The State of Florida," says the black type of each of those new citrus ads. Boy, page Nathan Mayo, and tell him he'd better get the spray machine down in that back forty!

The big drive to get the selling of all Florida citrus fruit under a single head was begun by the Exchange in 1924. In the eleven years following the number of agencies actually handling actively the sale of Florida citrus in the markets has almost doubled, we figure. Human reactions are funny things.

C. M. McLennan the new editor of The Florida Grower. Welcome back to Florida, Mac, and may you live long, "und brospen."

From Dirty Woman's Gulch, Arizona, comes the following mail inquiry: "Please tell me why, as is reported, a man cannot marry his widow's sister under the Florida law?" We wouldn't know. Inquiry is respectfully referred to Francis Whitehair of De Land. He is supposed to know all the answers.

THE COUNTY AGENT: A FACTOR IN THE PROGRESS OF FLORIDA AGRICULTURE

(Continued from page 6)

farm value of Florida's crops and livestock products is approximately 115,000,000 dollars from a harvested acreage of 1.2 millions acres. To maintain and improve this return in the face of competition from other states and certain foreign countries is a job worthy of the best thought and effort for this is new value annually created and is basic to the State's welfare.

IF suffering with Piles, I want to help you. Drop me a line explaining.

Fred C. Whitney

317 6th Ave., Des Moines, Iowa

CLASSIFIED

Advertisements

The rate for advertisements of this nature is only five cents per word for each insertion. You may count the number of words you have, multiply it by five, and you will have the cost of the advertisement for one insertion. Multiply this by the total number of insertions desired and you will have the total cost. This rate is so low that we cannot charge classified accounts, and would, therefore, appreciate a remittance with order. No advertisement accepted for less than 50 cents.

2 YR. FIELD GROWN ROSE BUSHES: Red, Pink, Shell, Salmon, White Radiance, Hollande, Columbia, Briarcliff, Sunburst, Pres. Hoover, Victoria, Talisman, Sensation. All 19c each, postpaid. Ship C.O.D. NAUGHTON FARMS, Waxahachie, Texas.

CAUSERIENCE LEPIDOFLOIA — (So-called Brizilian oak), resembles Australian pine. Grand for wind-breaks. Cold resistant. Beautiful. Send for sample of foliage. \$6.00 per 100. S. F. Matthews, Homestead, Fla.

ALYCE CLOVER, the best legume for hay or covercrop. Write for information. Hardin Groves, Box 63, Lakeland, Fla.

FOR SALE — 80 acres good citrus land, two miles northwest of Cocoa, Brevard County, Florida. Price \$1600.00 cash. S. Hendry, City Point, Florida.

FILMS DEVELOPED 2 prints of each 25c; 20 reprints 25c. Pine Photo, Y-5134 Nevada, Chicago.

THRIFTY TREES and budwood from record performance Perrine Lemon parents, Persian Lime and other citrus varieties. DeSoto Nurseries, DeSoto City, Fla.

CROTALARIA — New crop, high quality, double cleaned, scarified Crotalaria Striata seed for sale. Attractive prices. Carolinas' Crotalaria Co., Camden, S. C.

UP to \$20.00 paid for Indian Head Cents; Half Cents \$125.00; Large Copper Cents \$500.00, etc. Send dime for list. Roman-occinshop, D. Springfield, Mass.

Large citrus trees for replanting at special low price. Grafted avocado trees and budwood of Perrine lemon and Tahiti limes.

WARD'S NURSERY
Avon Park, Fla.

MEN WANTED—Sell Shirts. No experience necessary. Free samples. Commission in advance. Free ties with shirts. Carroll Mills, 875A Flatbush Av., Brooklyn N. Y.

HARDIN'S SPERRYOLA Lemon, a profitable adapted commercial variety for all sections. Hardy, prolific grower and producer. Limited number choice trees. Hardin Nurseries, Box 63, Lakeland, Fla.

WANTED — Man with from ten thousand to twenty thousand dollars to grow an entirely new orange for the U. S. markets. Cheap lands, no cold, plenty water, no fertilizer. A world beater in an orange. Patented.—Address, Buen Negocio, Gaveta -1, Holguin, Cuba.

PERSONAL

QUIT TOBACCO easily, inexpensively, without drugs. Send address. N. A. Stokes, Mohawk, Florida.

POSITION WANTED — Managing, caring for citrus grove, for good, reliable party. Highest type reference gladly furnished. H. A. KUTER, Elkton, Fla.

WANTED—To hear from owner of land for sale. O. Hawley, Baldwin, Wis.

FREE Booklet describes 87 plans for making \$20-\$100 weekly, home or office, business your own. Elite Service, 505 Fifth ave., New York City.

CLEOPATRA MANDARIN and Sour Orange rood stood. Also Hamlin, Valencia and Persian Lime budded trees. Grand Island Nurseries, Eustis, Fla.

WANTED—To hear from owner having good farm for sale. Cash price, particulars, John Black, Chippewa Falls, Wisconsin.

PUREBRED PULLETS FOR SALE—White Leghorns and Anconas ready to ship. Barred Rocks and R. I. Reds shortly. Several hundred yearling White Leghorn hens now laying 70%. Write or wire for prices. C. A. Norman, Dr. 1440, Knoxville, Tenn.

LAREDO SOY BEANS, considered free from nematode, excellent for hay and soil improvement. Write the Baldwin County Seed Growers Association, Loxley, Alabama, for prices.

FANCY ABAKKA pineapple plants. R. A. Saeger, Ankona, Florida.

FOR SALE—Selected budwood and trees of Ferrine lemon, Tahiti lime, new varieties tangelos and other citrus. Ward's Nursery, Avon Park, Fla.

SCENIC HIGHWAY NURSERIES has a large stock of early and late grapefruit and oranges. One, two and three year buds. This nursery has been operated since 1888 by G. H. Gibbons, Waverly, Fla.

NEW COMMERCIAL lemon for Florida, the Ferrine; proven. All residents need yard trees, keeping Florida money at home. Booking orders for budded stock for Winter delivery. DeSoto Nurseries, DeSoto City, Fla.

SATSUMA BUDWOOD from Bearing Trees. Hills Fruit Farm, Panama City, Fla.

SEED—Rough lemon, sour orange, cleopatra. New crop from type true parent trees. Also thrifty seedlings. DeSoto Nurseries, DeSoto City, Florida.

BUDDED trees new Florida commercial lemon, proven, thin skinned, juicy, scab immune. Also rough lemon, sour orange and Cleopatra seed and liningout seedlings. DeSoto Nurseries, DeSoto City, Fla.

SEEDS—ROUGH LEMON, SOUR ORANGE, CLEOPATRA. Pure, fresh, good germination. Also seedlings lineout also. DeSoto Nurseries, DeSoto City, Fla.

CROTALARIA SPECTABILIS—Seed for sale. New crop, well cured, bright and clean. Price 25c per pound in 100 pound lots and over. 80c per pound in less quantities. J. O. B. Hastings, Bunnell, Lowell and San Antonio, Florida. F. M. LEONARD & COMPANY, Hastings, Florida.

WANTED—Position as packing house foreman: in citrus business twenty-five years; ten years' experience as foreman; married man. J. R. Henry, Okahumpka, Florida.

SOME IDEAS OF SOIL DEFICIENCIES

R. M. BARNETTE

CHEMIST, FLORIDA AGRICULTURAL STATION

In recent years, whenever a group of people interested in soils, plants and fertilizers get together, the discussion usually ultimately turns to the question of soil deficiencies. Consequently, it seems desirable at this time to outline some of the ideas or theories of soil deficiencies.

First we must agree upon what is to be considered a soil deficiency. Limiting the application of the term to mineral plant nutrients, a soil deficiency may be defined as a lack of some nutrient element or elements in available form for the optimum development of plant growth in the soil. With this definition in mind, it follows that there are only two general sets of soil conditions which may bring about a deficiency.

First, the soil may not contain the element required for healthy plant growth, or second, if the element is present in sufficient quantities it may not be available due to an advance soil condition. The first named soil may be dismissed with a word. The poor growth of cultivated plants on the poorer sandier soils of Florida without fertilization is sufficient evidence that these soils have always contained an inadequate available supply of even the commonest plant nutrient elements for these plants.

On the other hand, there are a number of interesting observations on soils which without doubt contain sufficient quantities of the many elements required for plant growth, but in which some condition precludes the availability of one or more of these elements to growing plants. Thus, some inherent property of the soil may cause a necessary element to be unavailable to the cultivated plant.

The higher content of some of the heavier north and west Florida soils in iron and aluminum compounds makes phosphate fertilization in that section a more serious problem than on some other soils containing less of these compounds. Iron and aluminum phosphates are highly insoluble in water and the soil solution and are more difficultly available to plants than are some other forms of phosphorus. Again soil may be weathered from phosphatic-limestone material and contain relatively high amounts of phosphorus compounds. On such soils, it has been reported that applications of zinc sulphate have not been as effective in correcting the bronzing of tung trees, as on other types lower in phosphates. Zinc phosphate is one of the most insoluble forms of zinc, as may be readily demonstrated in simple laboratory experiments. Likewise, the response of cultivated plants growing in the marl soils of Florida to the application of manganous sulphate may in part be attributed to the insolubility of manganese compounds in these soils. These examples serve to show how some of the inherent properties of soils may cause deficiencies.

A more or less classical example of the manner in which the application of fertilizers and soil amendments may cause deficiency is found in the overliming of sandy soils. Several types of chlorosis or other malnutritious may develop in plants growing on over-limed sandy soils. A potassium deficiency may be induced by over-liming these poorer soils low in organic matter content. The explanation of this deficiency in over-limed soils is still the subject of study in soil laboratories and has not been

(Continued on page 19)



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